

Name: _____

Partners Name: _____

Project Title/ Idea _____ p. _____

The Science Fair Process v1.0 (25.Sept.2015)

1. Choose a topic. Be sure it interests you. Don't pick one because you think it will be easy. Talk it over with your parents and when you have decided, inform Mr. Golden for approval, and do not ask to change your topic later. Get your Science Fair Topic form signed by your parents and teacher.

2. State your purpose as a question. What is it that you want to find out by doing this project?

3. Research your problem. Look at any websites/ books/ magazines that might help you, make observations by simply looking at things, talk to people, and find out as much as possible about your topic. Write down any ideas you have and where you got them. Also, keep note of all information needed for citing your resources.

4. Form a hypothesis. What do you think is going to happen? Based on what you know or found out from step #3, what do you think the results of your experiments will be? After doing the experiments, it may turn out that your guess was wrong. It is okay if this happens.

5. Plan your project. How will you test your hypothesis? What experiments will you do? How will you measure the results? Where will you keep your information? Be sure to keep notes and write down everything you do and what happens. Develop a preliminary set of procedures.

6. Collect all your materials. Find a place to keep things where others won't bother them. Let other family members know what you are doing so they do not throw your materials away.

7. Now you can start your experimentation. Remember, the more times you do an experiment the more reliable and accurate the results will be.

a. Conduct a trial run of your experiments to make sure your procedures work.

b. Make any changes needed to your procedures and rewrite them.

Conduct each experiment at least **three times**. Use the same measuring device and procedures throughout.

Check the measurements to be sure you are correct.

8. Record your data in a notebook dedicated to science fair. As you do your experiments, you will want to write down what you saw or found out. Organize this information in an orderly manner, tables, charts, etc. take pictures! Put the date, time, and any other useful information. Write your measurements clearly.

9. Draw conclusions. What did you learn from your experiments? Have you proved or disproved your hypothesis? You made a guess about what you thought would happen. Now tell what really did happen. You don't lose points if your guess turned out to be wrong, cite resources used to help you draw conclusions.

10. Prepare your titles, charts, graphs (digital), drawings, and diagrams. Make them large enough to see, neat, and colorful, type up your conclusion and abstract.

11. Construct your science fair display. Get your cardboard display board from a store or reuse waste cardboard sheet covered in butcher paper so you can show all your work.

12. Prepare and practice your presentation. Be able to tell about what you used what you did in your experiments, and what you found out. Know it well enough that you don't have to read it from the display.

13. Plan a time line so you don't leave everything until the last minute. If you need help, tell your parents and your teacher, the earlier the better.

I. Topic/Category: _____

(Look at page 4 in science fair packet)

- a. Approved Problem/Question: _____ Parent signature
_____ Teacher signature
- b. Questions (Must be in the form of a question)
- _____
- _____

You will be using a **new composition book, 3 ring binder with paper, or paper folder with paper** as a science fair notebook. All of your work will be done in this, from research to procedure planning, data collection, and draft work on your conclusions. **Each member of the team will have their own** and each will include all information.

II. Research/Introduction:

(Write an introduction to your experiment that explains what is already known about the topic. Research information about the science concepts behind your experiment, and include the information in your introduction. Explain who would care about the results of the experiment, and why.) Make sure to record needed info for APA citations. You should have multiple sources to refer once done with the Research that will help you write your introduction, develop procedures for your project, and draw conclusions from your findings.

III. Hypothesis:

(If...then...as measured by... statement)

IV. Variables:

(Look in your scientific method note taker for definitions of IV, DV & constants)

Independent Variable: _____

Dependent Variable: _____

3 things to keep Constant: _____

V. Procedures.

a. Version 1:

(Must be listed as steps 1, 2, 3 etc), you will do a practice run on your experiments before you start collecting data for experimental analysis to see if changes need to be made to your procedures.

b. Version 2:

(Must be listed as steps 1, 2, 3 etc), rewrite procedures after you have finished a trial run. Highlight changes you made to your original procedures and give an explanation why you made the changes. You may need to do this multiple time. Most likely it will be a few procedures not all of them.

VI. Materials:

(Must be listed—be specific with brand names, amounts, sizes, etc.)

Material	Amount (#)	Size	Where to get it from?

VII. Data Table(s):

(Make a chart or a table to organize your data. You must use the metric system! Think about the number of trials you need, and use a ruler to make it neat.) This must be complete before experimentation starts. You can create a digital one as well and cut it out to past in your science fair experiment book.

VIII. Graph with analysis:

(Use a graphing program such as Excel or Google Spread Sheets, MatLab, etc. Include title, labeled axes, data, and key.) Print and attach or Sketch your digital graph below

IX. Analysis:

(Explain in words the trends or patterns shown in the graph, back up with data)

X. Conclusion:

Should be a few **paragraph** covering of the purpose of the experiment, a discussion of your major findings, an explanation of your findings, and recommendations for further study. Address the following points in paragraph form (don't just number off and answer each question)

- Restate the overall goal of the experiment (include independent and dependent variables sentence.)
- What were the major findings? (Summarize your data and graph results)
- Was the hypothesis supported by the data? If so how, if not so how?
- How could this experiment be improved? Recall you have already made improvements between procedure version 1 and 2.
- how could the study be carried forward -What could be studied next?

Poster Board Critique: (Board layout w/o glue--critique.)

Title:

Yes / No Is the title big enough to be read from at least 3 feet away?

Yes / No Did the title catch your attention?

Yes / No Can you tell what the project is about from the title?

Comment/Suggestion for improvement: _____

Problem/Question:

Yes / No Is it written in the form of a QUESTION?

Yes / No Does it mention both the IV and the DV?

Comment/Suggestion for improvement: _____

Variables:

Yes / No Did they correctly identify the IV as the one that was manipulated/changed?

Yes / No Did they correctly identify the DV as the one that was measured to answer the Q?

Yes / No Did they identify at least 3 variables that needed to be kept constant?

Comment/Suggestion for improvement: _____

Hypothesis:

Yes / No Does the "if" part include the independent variable?

Yes / No Does the "then" part make a SPECIFIC prediction?

Yes / No Does the "as measured by" part include the dependent variable?

Comment/Suggestion for improvement: _____

Materials:

Yes / No Are all of the needed materials included in the list?

Yes / No Are the required AMOUNTS of each material included in the list?

Comment/Suggestion for improvement: _____

Procedures:

Yes / No Are the procedures listed in a numbered format (1, 2, 3, etc.)?

Yes / No Are the procedures specific enough that YOU could easily repeat their experiment?

Yes / No Are the procedures complete?

Comment/Suggestion for improvement: _____

Data Table:

Yes / No Does the data table clearly label the independent and dependent variables?

Yes / No Is it neat and easy to read?

Comment/Suggestion for improvement: _____

Graph:

Yes / No Does the graph have a clear title related to the experiment?

Yes / No Does the graph have labeled axes?

Comment/Suggestion for improvement: _____

Graph Analysis:

Yes / No Does the graph analysis explain in words the trends or patterns on the graph?

Yes / No Does the graph analysis point out SPECIFIC data points (numbers) that are important?

Comment/Suggestion for improvement: _____

Conclusion:

Yes / No Does the conclusion RESTATE the hypothesis?

Yes / No Does the conclusion say whether the hypothesis was SUPPORTED or REFUTED (not "right" or "wrong")?

Yes / No Does the conclusion use NUMBERS and DATA to explain why the hypothesis was supported or refuted?

Yes / No Does the conclusion describe the results THOROUGHLY (not just a quick rundown)?

Yes / No Does the conclusion mention at least 2 possible experimental errors?

Yes / No Does the conclusion explain HOW each error could have affected or changed the results?

Yes / No Does the conclusion use SCIENTIFIC VOCABULARY to explain what was learned?

Yes / No Does the conclusion give SPECIFIC improvements that could be made to the procedures?

Yes / No Does the conclusion describe possible future investigations or questions that are RELATED to this experiment?

Yes / No Does the conclusion use proper English grammar and conventions?

Comment/Suggestion for improvement: _____